

Ethanol Use in California's Gasoline: Policy Drivers and Challenges

**National Association of State Energy Officials
2004 Energy Outlook Conference
Washington D.C.
February 9, 2004**

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Topics

- Background
- California's Request for Oxygen Waiver
- Ethanol Demand Scenarios
- Policy Drivers for Use of Ethanol
- Challenges and Opportunities
- California Ethanol Information

Background

- California phased out MTBE use by 1/01/04
- Ethanol is the only oxygenate approved for use in California gasoline
- California produces less than 10 million gallons of ethanol each year
- California is now the largest ethanol consuming state in the nation
 - Demand will approach one billion gallons in 2004

California's Request to U.S. EPA for a Minimum 2% Oxygen Content Waiver

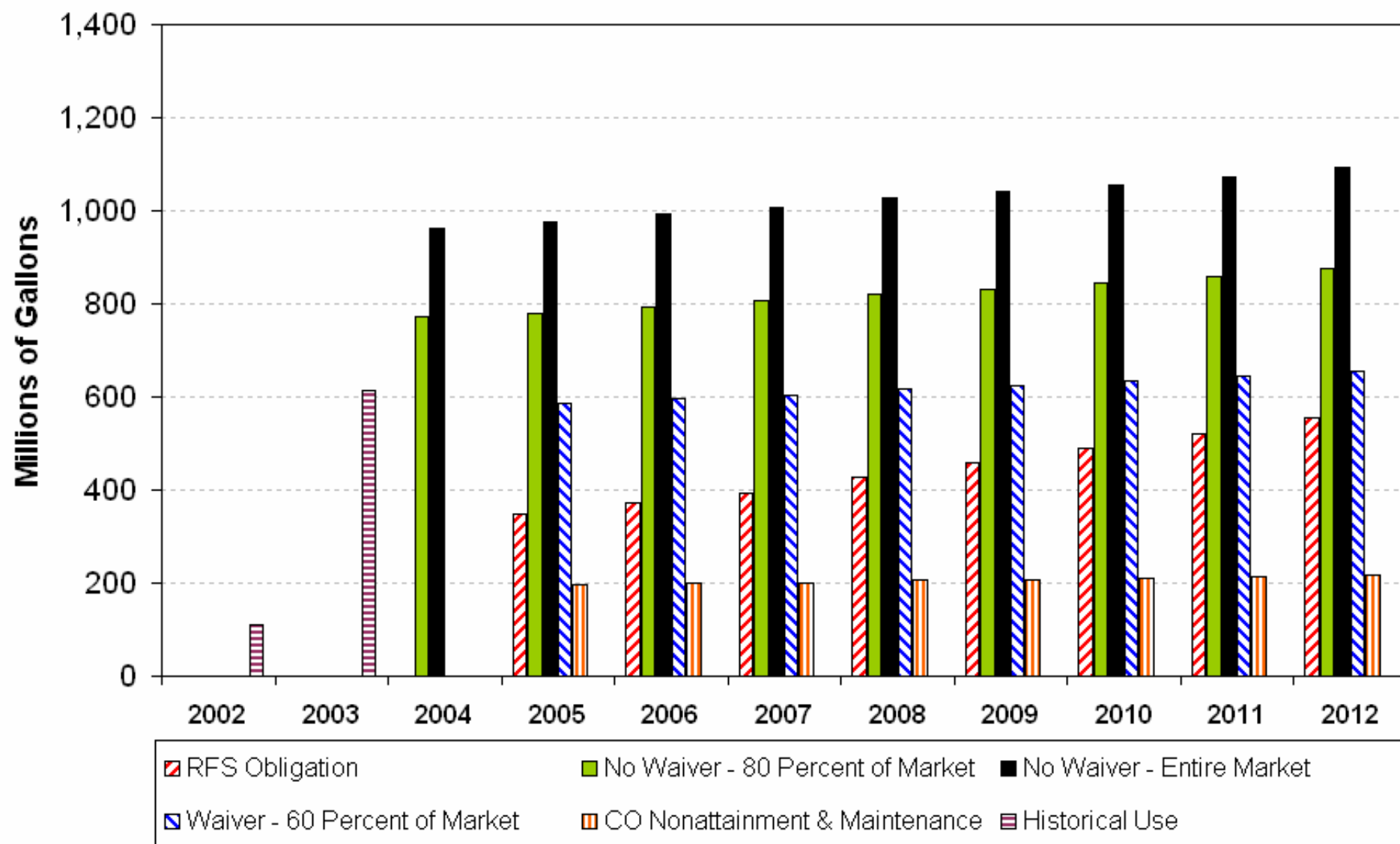
- On January 29, 2004, Governor Schwarzenegger asks U.S. EPA to grant waiver stating:
 - *“...the oxygen requirement limits the ability of fuel producers to use the most cost-effective mix of gasoline blends and, as a result, greatly increases fuel costs borne by California motorists.”*

Request to U.S. EPA for Oxygen Waiver, Continued

- Governor states:
 - *"I recognize the benefit of one aspect of the Clean Air Act (CAA) oxygen requirement — the dramatically increased use of ethanol. However, due to the ban on MTBE use, there will be a very large ethanol market in California even without the CAA oxygen mandate."*
 - *"California is also considering various mechanisms to spur in-state ethanol production so that our citizens and our economy benefit directly from the State's increased use of ethanol as a gasoline blending component."*

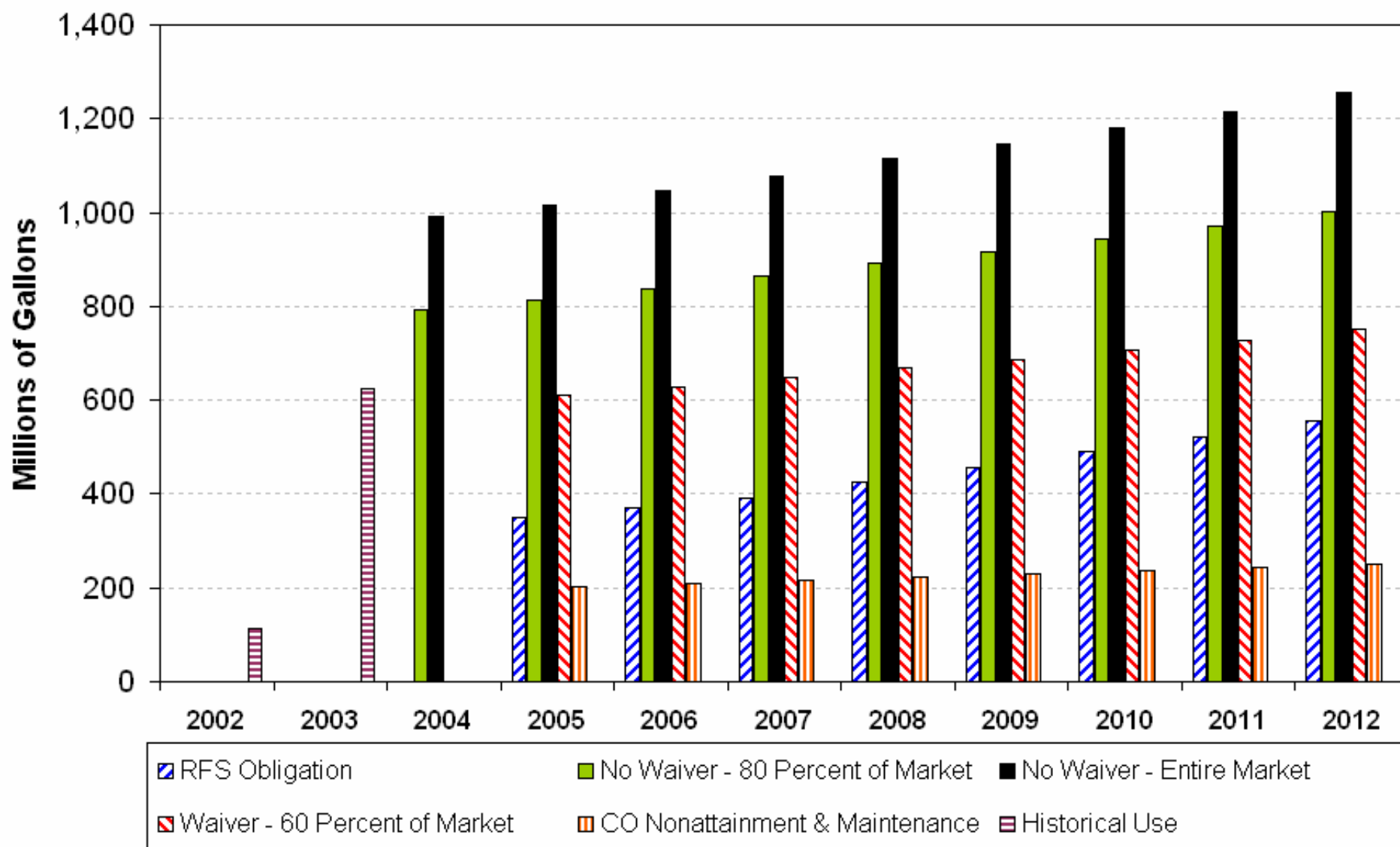
Projected California Ethanol (6%) Use

Base Case: Gasoline Demand Growth at 1.6 Percent Per Year



Projected California Ethanol (6%) Use

High Case: Gasoline Demand Growth at 3 Percent Per Year



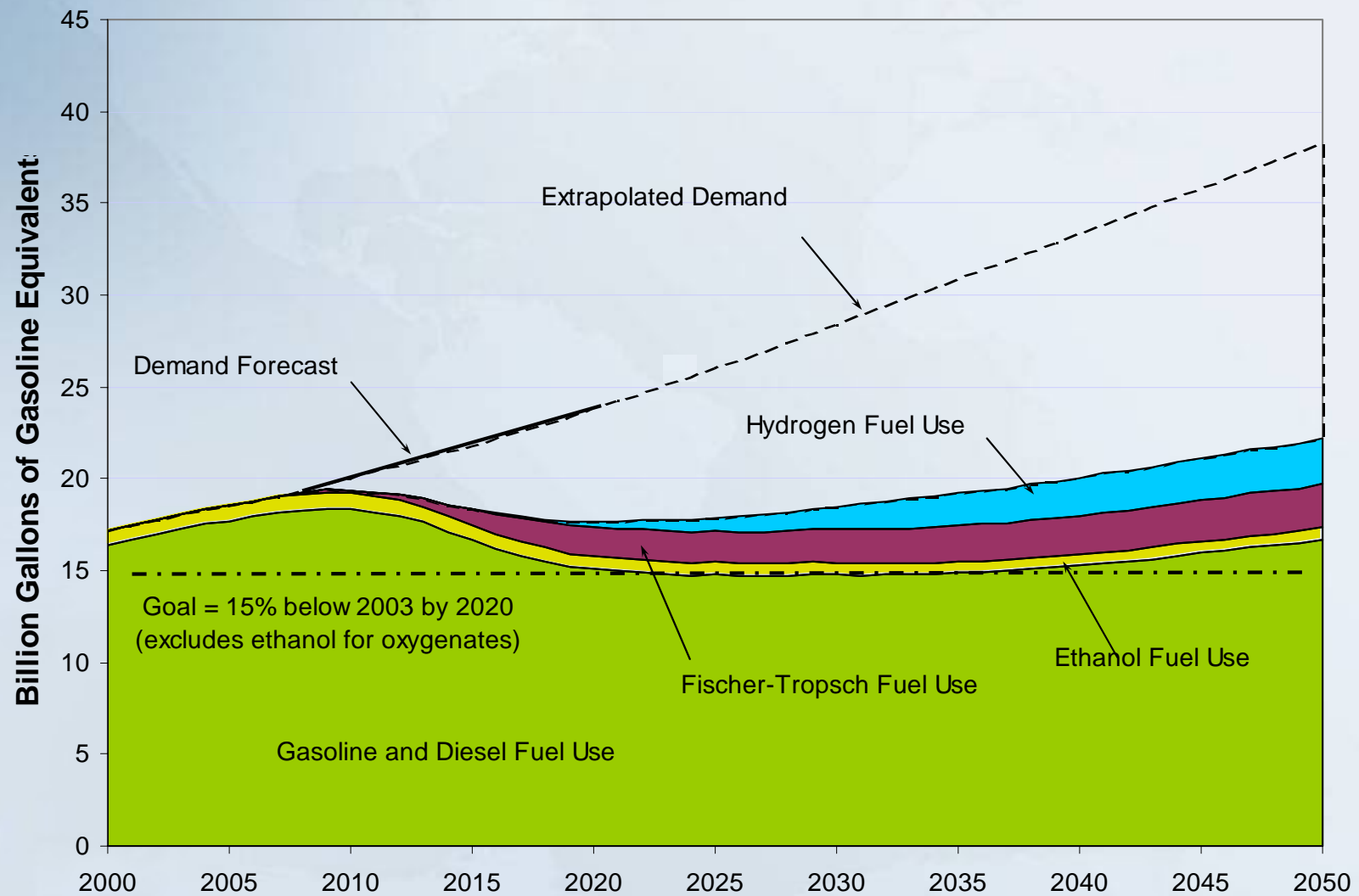
Policy Drivers

- 1) California Environmental Policy Council determines ethanol as acceptable substitute for MTBE (2000)
- 2) Federal law requires minimum 2 percent by weight oxygen content in all reformulated gasoline (RFG) regions
- 3) Federal winter oxygenated fuels program to reduce carbon monoxide emissions in the South Coast Air Basin and parts of Imperial County
- 4) California RFG regulations permit discretionary use, but federal mandate applies to 80% of gasoline sold in California
- 5) Ethanol, as a renewable fuel, helps reduce greenhouse gas emissions
- 6) Ethanol's role in displacing petroleum use

Policy Drivers and Energy Commission Recommendations

- 1) Reduce demand for on-road gasoline and diesel 15 percent below the 2003 level by 2020 and maintain that level for the foreseeable future.
- 2) Increase the use of non-petroleum fuels to 20 percent by 2020 and 30 percent by 2030.

Recommended Goals and Impact on Fuel Use



Uncertainties and Challenges Facing Ethanol Use in California

- Federal Energy Legislation???
- Outcome of California's request for oxygen waiver
- Future California fuel specifications under consideration
 - Sulfur reductions from 20 parts per million (ppm) to 5ppm
 - Oxygen (% weight) reduced from 2% to 0
 - Reid Vapor Pressure from 7.0 psi to 6.5 psi
- Role of higher use of ethanol-blended gasoline on increased emissions of volatile organic compounds.
 - Results of study for Air Resources Board forthcoming on permeation effects of ethanol through hoses and fuel system components
 - Impacts may be real and significant

Opportunities for Greater Use of Ethanol in California

- Growing transportation fuel market
- Large agricultural sources as well as cellulosic wastes and residues for making ethanol
- E-10 blends
- E-85 market
- Fuel Cell applications
- Ethanol/Diesel blends

For More Information about Ethanol

- California Energy Commission's Website at:
 - www.energy.ca.gov/ethanol
 - www.energy.ca.gov/pier/renew/ethanol
- Energy Commission Reports:
 - *Ethanol Fuel Incentives Applied in the U.S. – Reviewed from California's Perspective (1/04)*
 - *Ethanol Supply Outlook for California (10/03)*
 - *2002 Update of U.S. Ethanol Industry Production Capacity Outlook Report (7/03)*
 - *U.S. Ethanol Industry Production Capacity Outlook (8/01)*
 - *Costs and Benefits of a Biomass-to-Ethanol Production Industry in California (3/01)*
 - *Evaluation of Biomass-to-Ethanol Fuel Potential in California (12/99)*